globals

Defines input namelists and global variables

contents

1.1 overview

1. Here, and elsewhere, input variables are shown in `red`. The input list is read from file and broadcast in initial.

1.2 input list: `focusin`

- `Idisplay = 0` : 0: silent output; -1 = more details ;
- `Isymmetric = 0` : 0: no symmetry (recommended); 1: enforce stellarator symmetry;
- `Itopology = 0` : 0: VMEC-style surface; 1: knots;
- `knotsurf = 0.200D-00` : radius of knotted plasma boundary;
- `ellipticity = 0.000D-00` : ellipticity of knotted plasma boundary;
- `Linitialize = 0` : -N: circular coils for knots; -1: read coils.xxx file; 0: read xxx.focus; N: circular coils for unknots;
- `Rmaj = 1.000D+00` : major radius of coils (now adaptive to plasma);
- `rmin = 0.500D+00` : minor radius of coils;
- `Ic = 1` : 0: currents fixed; 1: currents varying;
- `Io = 1.000D+00` : initial current value (A);
- `Iw = 1.000D+00` : redundant;
- `Lc = 0` : 0: coil geometry fixed; 1: quadratic constraint for length; 1: exponential constraint; see tlength;
- `Lo = 1.000D+00` : object/normalized length;
- `Lw = 1.000D+00` : weight for each coil's length;
- `NFcoil = 4` : Fourier harmonics for each coil;
- `NDcoil = 128` : number of segments per coil;
- `Loptimize = -2/-1/0/1/2/5` : -1 and -2 are for testing the derivatives; 1: old descent; 2: differential flow (DF); 5: conjugate gradient (CG);
- `Lnormalize = 1` : 0: turn off normalizing weights, and using —B— for Bn normalization; 1: turn on normalizing weights, $w_{normed} = w_0/\chi_0$;
- `weight_bnorm = 1.000D+00` : weight for bnormal constraint; bnormal
- `weight_tflux = 0.500D+00` : weight for toroidal flux constraint; torflux
- `target_tflux = 1.000D+00` : target toroidal flux; torflux
- `weight_ttlen = 0.000D+00` : weight for coil length; tlength
- `weight_eqarc = 1.000D+00` : weight for equal arc length constraint; equarcl
- `weight_ccsep = 0.000D+00` : weight for coil-coil separation ; coilsep
- `tauend = 1.000D+00` : stopping "time" in DF; descent;
- `tautol = 1.000D-04` : DF o.d.e. integration tolerance;

- `Ntauout = 100` : intermediate time steps; descent;
- `Savfreq = 1` : writing files frequency;
- `Nteta = 64` : poloidal surface resolution;
- `Nzeta = 64` : toroidal surface resolution;
- `absacc = 1.000D-08` : redundant;
- `absreq = 1.000D-12` : redundant;
- `relreq = 1.000D-01` : redundant;
- `xtol = 0.000D+00` : E04LBF tolerance 10*sqrtmachprec;
- `eta = 0.900D+00` : E04LBF accurance rate (step ration);
- `stepmx = 1.000D+05` : E04LBF Euclidean distance between solution and starting;
- `Mpol = -8` : Fourier poloidal resolution for writing knotted surface;
- `Ntor = 4` : Fourier toroidal resolution for writing knotted surface
- `Lpoincare = 0` : to construct Poincaré plot or others; 1: Poincaré plot; 2: writing mgrid file; 4: writing SPEC needed files; The three can be combined freely;
  - if `Lpoincare` > 0, then the fieldline parameter is the cylindrical toroidal angle, and so B^ϕ must not equal zero;
  - if `Lpoincare` $= -1$, then the fieldline parameter is the length;
- `odetol = 1.000D-10` : Poincaré plot, pp00aa;
- `Ppts = 100` : Poincaré plot, pp00aa;
- `Ptrj = 8` : Poincaré plot, pp00aa;
- `phi = 0.0` : REDUNDANT;
- `iphi = 0` : Poincaré plot,
- `bstol = 1.000D-06` : tolerance in Biot-Savart integral; passed to oculus:bs00aa;
- `bsnlimit = 100000` : max. number of iterations used in Biot-Savart integral; passed to oculus:bs00aa;